



**6450-01-P**

**DEPARTMENT OF ENERGY**

**Second Amended Notice of Intent to Modify the Scope of the Surplus Plutonium  
Disposition Supplemental Environmental Impact Statement and Conduct  
Additional Public Scoping**

**AGENCY:** U.S. Department of Energy, National Nuclear Security Administration.

**ACTION:** Amended Notice of Intent.

**SUMMARY:** The U.S. Department of Energy (DOE) announces its intent to modify the scope of the Surplus Plutonium Disposition Supplemental Environmental Impact Statement (SPD Supplemental EIS, DOE/EIS-0283-S2) and to conduct additional public scoping. DOE issued its Notice of Intent (NOI) to prepare the SPD Supplemental EIS on March 28, 2007, and issued an Amended NOI on July 19, 2010. DOE now intends to further revise the scope of the SPD Supplemental EIS primarily to add additional alternatives for the disassembly of pits (a nuclear weapons component) and the conversion of plutonium metal originating from pits to feed material for the Mixed Oxide (MOX) Fuel Fabrication Facility (MFFF), which DOE is constructing at the Savannah River Site (SRS) in South Carolina. Under the proposed new alternatives, DOE would expand or install the essential elements required to provide a pit disassembly and/or conversion capability at one or more of the following locations: Technical Area 55 (TA-55) at the Los Alamos National Laboratory (LANL) in New Mexico, H-Canyon/HB-Line

at SRS, K-Area at SRS, and the MFFF at SRS. In addition, DOE has decided not to analyze an alternative, described in the 2010 Amended NOI, to construct a separate Plutonium Preparation (PuP) capability for non-pit plutonium because the necessary preparation activities are adequately encompassed within the other alternatives.

The MOX fuel alternative is DOE's preferred alternative for surplus plutonium disposition. DOE's preferred alternative for pit disassembly and the conversion of surplus plutonium metal, regardless of its origins, to feed for the MFFF is to use some combination of facilities at TA-55 at LANL, K-Area at SRS, H-Canyon/HB-Line at SRS and MFFF at SRS, rather than to construct a new stand-alone facility. This would likely require the installation of additional equipment and other modifications to some of these facilities. DOE's preferred alternative for disposition of surplus plutonium that is not suitable for MOX fuel fabrication is disposal at the Waste Isolation Pilot Plant (WIPP) in New Mexico.

**DATES:** DOE invites Federal agencies, state and local governments, Native American tribes, industry, other organizations, and members of the public to submit comments to assist in identifying environmental issues and in determining the appropriate scope of the SPD Supplemental EIS. The public scoping period will end on **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. DOE will consider all comments received or postmarked by **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. Comments received after that date will be considered to the extent practicable. Also, DOE asks that

Federal, state, local, and tribal agencies that desire to be designated cooperating agencies on the SPD Supplemental EIS contact the National Environmental Policy Act (NEPA) Document Manager at the addresses listed under **ADDRESSES** by the end of the scoping period. The Tennessee Valley Authority (TVA) is a cooperating agency for sections of the EIS as described below. DOE will hold a public scoping meeting:

- February 2, 2012 (5:30 p.m. to 8:00 p.m.) at Cities of Gold Hotel, 10-A Cities of Gold Road, Pojoaque, NM 87501

The scoping period announced in this second Amended NOI will allow for additional public comment and for DOE to consider any new information that may be relevant to the scope of the SPD Supplemental EIS. Because the additional alternatives do not involve new locations except for LANL, and because there have been two previous scoping periods for this SPD Supplemental EIS, DOE does not intend to hold additional scoping meetings except at Pojoaque, NM, or to extend the scoping period beyond that announced herein.

**ADDRESSES:** Please direct written comments on the scope of the SPD Supplemental EIS to Ms. Sachiko McAlhany, SPD Supplemental EIS NEPA Document Manager, U.S. Department of Energy, P.O. Box 2324, Germantown, MD 20874-2324. Comments on the scope of the SPD Supplemental EIS may also be submitted via e-mail to [spdsupplementaleis@saic.com](mailto:spdsupplementaleis@saic.com) or by toll-free fax to 877-865-0277. DOE will give equal weight to written, e-mail, fax, telephone, and oral comments. Questions regarding the

scoping process and requests to be placed on the SPD Supplemental EIS mailing list should be directed to Ms. McAlhany by any of the means given above or by calling toll-free 877-344-0513.

For general information concerning the DOE NEPA process, contact: Carol Borgstrom, Director, Office of NEPA Policy and Compliance (GC-54), U.S. Department of Energy, 1000 Independence Avenue, SW, Washington, D.C. 20585-0103; telephone 202-586-4600, or leave a message toll-free 800-472-2756; fax 202-586-7031; or send an e-mail to [askNEPA@hq.doe.gov](mailto:askNEPA@hq.doe.gov). This second Amended NOI will be available on the Internet at <http://energy.gov/nepa>.

## **SUPPLEMENTARY INFORMATION:**

### **Background**

To reduce the threat of nuclear weapons proliferation, DOE is engaged in a program to disposition its surplus, weapons-usable plutonium in a safe, secure, and environmentally sound manner, by converting such plutonium into proliferation-resistant forms not readily usable in nuclear weapons. The U.S. inventory of surplus plutonium is in several forms. The largest quantity is plutonium metal in the shape of pits (a nuclear weapons component). The remainder is non-pit plutonium, which includes plutonium oxides and metal in a variety of forms and purities.

DOE already has decided to fabricate 34 metric tons (MT) of surplus plutonium into MOX fuel in the MFFF (68 FR 20134, April 24, 2003), currently under construction at SRS, and to irradiate the MOX fuel in commercial nuclear reactors used to generate electricity, thereby rendering the plutonium into a spent fuel form not readily usable in nuclear weapons.

DOE announced its intent to prepare a SPD Supplemental EIS in 2007 to analyze the potential environmental impacts of alternatives to disposition about 13 MT of surplus plutonium (72 FR 14543; March 28, 2007). DOE issued an Amended NOI in 2010 “to refine the quantity and types of surplus weapons-usable plutonium material, evaluate additional alternatives, and no longer consider in detail one alternative identified” in the 2007 NOI (75 FR 41850; July 19, 2010).<sup>1</sup> The 2007 NOI and 2010 Amended NOI are available at <http://www.nnsa.energy.gov/nepa/spdsupplementaleis> and details from them are not reproduced in this second Amended NOI.

In the 2010 Amended NOI, DOE proposed to revisit its decision to construct and operate a new Pit Disassembly and Conversion Facility (PDCF) in the F-Area at SRS (65 FR 1608; January 11, 2000) and analyze an alternative to install and operate the pit disassembly and conversion capabilities in an existing building in K-Area at SRS. With this second Amended NOI, DOE is proposing to analyze additional alternatives for pit

---

<sup>1</sup> The 2010 Amended NOI describes changes in the inventory of surplus plutonium to be analyzed in the SPD Supplemental EIS, though the total quantity remained about 13 MT. On March 30, 2011, DOE made an amended interim action determination to disposition approximately 85 kilograms (0.085 MT) of surplus, non-pit plutonium via the Defense Waste Processing Facility at SRS or disposal at the Waste Isolation Pilot Plant (WIPP) in New Mexico. On October 17, 2011, DOE made another interim action determination to dispose of 500 kilograms (0.5 MT) of surplus, non-pit plutonium at WIPP. These determinations do not affect the range of reasonable alternatives to be analyzed in the SPD Supplemental EIS.

disassembly and conversion, which could involve the use of TA-55 at LANL, H-Canyon/HB-Line at SRS, K-Area at SRS, and the MFFF at SRS. These alternatives are described below under **Potential Range of Alternatives**.

### **Purpose and Need for Agency Action**

DOE's purpose and need remains to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Comprehensive disposition actions are needed to ensure that surplus plutonium is converted into proliferation-resistant forms.

### **Potential Range of Alternatives**

Since the 2010 Amended NOI, DOE has reconsidered the potential alternatives for pit disassembly and conversion. DOE now is proposing to analyze additional alternatives. The EIS analysis will account for the possibility that DOE could use some combination of facilities at TA-55 at LANL, K-Area at SRS, H-Canyon/HB-Line at SRS, and MFFF at SRS to disassemble pits, and produce feed for the MFFF.

DOE has determined that the construction of a separate Plutonium Preparation (PuP) capability would not be required because the alternatives that are being considered for the disposition of non-pit plutonium include any necessary preparation activities.

The complete list of alternatives that DOE proposes to analyze in detail in the SPD Supplemental EIS is provided below.

## Surplus Plutonium Disposition

DOE will analyze four alternative pathways to disposition surplus plutonium. There are constraints on the type or quantity of plutonium that may be dispositioned by each pathway. For example, there are safety (criticality) limits on how much plutonium can be sent to the Defense Waste Processing Facility (DWPF) at SRS, and some plutonium is not suitable for fabrication into MOX fuel. Accordingly, DOE expects to select two or more alternatives following completion of the SPD Supplemental EIS.

- H-Canyon/DWPF – DOE would use the H-Canyon at SRS to process surplus non-pit plutonium for disposition. Plutonium materials would be dissolved, and the resulting plutonium-bearing solutions would be sent to a sludge batch feed tank and then to DWPF at SRS for vitrification. Depending on the quantity, adding additional plutonium to the feed may increase the amount of plutonium in some DWPF canisters above historical levels.
- Glass Can-in-Canister Immobilization – DOE would install a glass can-in-canister immobilization capability in K-Area at SRS. The analysis will assume that both surplus pit and non-pit plutonium would be vitrified within small cans, which would be placed in a rack inside a DWPF canister and surrounded with vitrified high-level waste. This alternative is similar to one evaluated in the 1999 Surplus Plutonium Disposition EIS (SPD EIS; DOE/EIS-0283), except that the capability would be installed in an existing rather than a new facility. Inclusion of cans with

vitrified plutonium would substantially increase the amount of plutonium in some DWPF canisters above historical levels.

- WIPP – DOE would provide the capability to prepare and package non-pit plutonium using existing facilities at SRS for disposal as transuranic waste at WIPP, provided that the material would meet the WIPP waste acceptance criteria. This alternative may include material that, because of its physical or chemical configuration or characteristics, could not be prepared for MFFF feed material and material that could be disposed at WIPP with minimal preparation.
- MOX Fuel – Plutonium feed material, beyond the 34 MT for which a decision already has been made, would be fabricated into MOX fuel at the MFFF, and the resultant MOX fuel would be irradiated in commercial nuclear power reactors. For purposes of analyzing this alternative, the EIS will assume all the surplus pit and some of the surplus non-pit plutonium would be dispositioned in this manner.

#### Pit Disassembly and Conversion Capability

Plutonium pits must be disassembled prior to disposition and, for the MOX alternative, plutonium metal from pits or non-pit material must be converted to an oxide form to be used as feed in producing MOX Fuel. DOE will analyze the potential environmental impacts of conducting pit disassembly and/or conversion activities in five different facilities to support its prior decision to disposition 34 MT of surplus plutonium by fabrication into MOX fuel and also any decision subsequent to this SPD Supplemental



EIS to disposition additional surplus plutonium as MOX fuel. The Pit Disassembly and Conversion Capability Alternatives that NNSA proposes to analyze are:

- PDCF in F-Area at SRS – DOE would construct, operate, and eventually decommission a stand-alone PDCF to disassemble pits and convert plutonium pits and other plutonium metal to an oxide form suitable for feed to the MFFF, as described in the SPD EIS and consistent with DOE’s record of decision for that EIS (65 FR 1608; January 11, 2000).
- Pit Disassembly and Conversion Capability in K-Area at SRS – DOE would construct, operate, and eventually decommission equipment in K-Area at SRS necessary to perform the same functions as the PDCF. The alternative would include reconfiguration of ongoing K-Area operations necessary to accommodate construction and operation of the pit disassembly and conversion capability.
- New alternatives for pit disassembly and conversion:
  - LANL/MFFF – DOE would expand existing capabilities in the plutonium facility (PF-4) in Technical Area-55 at LANL to disassemble pits and provide plutonium metal and/or oxide for use as feed material in MFFF at SRS. DOE also may add a capability to the MFFF to oxidize plutonium metal.

- LANL/MFFF/K-Area/H-Canyon/HB-Line at SRS – DOE would expand existing capabilities in the plutonium facility (PF-4) in Technical Area-55 at LANL to disassemble pits and provide plutonium metal and potentially oxide for use as feed material in MFFF at SRS. DOE also may add a capability to the MFFF to oxidize plutonium metal. To augment the capability to provide feed material to the MFFF, DOE also would disassemble pits in K-Area at SRS and process plutonium metal to an oxide form at the H-Canyon/HB-Line at SRS.

### Reactor Operations

MOX fuel will be irradiated in commercial nuclear reactors used to generate electricity, thereby rendering the plutonium into a spent fuel form not readily usable in nuclear weapons.

- DOE and TVA will analyze the potential environmental impacts of any reactor facility modifications necessary to accommodate MOX fuel operation at up to five TVA reactors – the three boiling water reactors at Browns Ferry, near Decatur and Athens, AL, and the two pressurized water reactors at Sequoyah, near Soddy-Daisy, TN. DOE and TVA will analyze the potential environmental impacts of operating these reactors using a core loading with the maximum technically and economically viable number of MOX fuel assemblies.

- DOE will analyze the potential environmental impacts of irradiating MOX fuel in a generic reactor in the United States to provide analysis for any additional future potential utility customers.

### **Potential Decisions**

The SPD Supplemental EIS will not reconsider decisions already made to disposition surplus plutonium, other than the decision to construct and operate the PDCF. DOE already has decided to fabricate 34 MT of surplus plutonium into MOX fuel in the MFFF (68 FR 20134; April 24, 2003), currently under construction at SRS, and to irradiate the MOX fuel in commercial nuclear reactors used to generate electricity. Subsequent to completion of the SPD Supplemental EIS, DOE will decide, based on programmatic, engineering, facility safety, cost, and schedule information, and on the environmental impact analysis in the SPD Supplemental EIS, which pit disassembly and conversion alternative(s) to implement to provide feed to the MFFF, which alternative(s) to implement for preparation of non-pit plutonium for disposition, whether to use the MOX alternative to disposition additional surplus plutonium (beyond 34 MT), and which alternative(s) disposition path(s) to implement for surplus plutonium that will not be dispositioned as MOX fuel. DOE may determine that it can best meet its full range of requirements in each of these areas by implementing two or more of the alternatives analyzed in the SPD Supplemental EIS. It is also possible that DOE may determine that its full range of requirements may be best met by implementing a composite set of actions that would be drawn from within the scope of the set of alternatives proposed and analyzed in the SPD Supplemental EIS.

DOE considers those alternatives that would avoid extensive construction and/or facility modification for the pit disassembly and conversion capability and non-pit plutonium preparation capability as having particular merit and, thus, has identified its preferred alternative for this proposed action. For non-pit plutonium preparation and pit disassembly and conversion of plutonium metal to MFFF feed for the manufacture of MOX fuel, DOE's preferred alternative is to use some combination of existing facilities, with additional equipment or modification, at TA-55 at LANL, K-Area at SRS, H-Canyon/HB-Line at SRS, and MFFF at SRS, rather than to construct a new, standalone facility. The MOX fuel alternative is DOE's preferred alternative for surplus plutonium disposition. DOE's preferred alternative for disposition of surplus plutonium that is not suitable for MOX fuel fabrication is disposal at WIPP.

As stated in the 2010 Amended NOI, DOE and TVA are evaluating use of MOX fuel in up to five TVA reactors at the Sequoyah and Browns Ferry Nuclear Plants. TVA will determine whether to pursue irradiation of MOX fuel in TVA reactors, and will determine which reactors to use initially for this purpose, should TVA and DOE decide to use MOX fuel in TVA reactors.

### **Potential Environmental Issues for Analysis**

DOE has tentatively identified the following environmental issues for analysis in the SPD Supplemental EIS. The list is presented to facilitate comment on the scope of the SPD

Supplemental EIS, and is not intended to be comprehensive or to predetermine the potential impacts to be analyzed.

- Impacts to the general population and workers from radiological and nonradiological releases, and other worker health and safety impacts.
- Impacts of emissions on air and water quality.
- Impacts on ecological systems and threatened and endangered species.
- Impacts of waste management activities, including storage of DWPF canisters and transuranic waste pending disposal.
- Impacts of the transportation of radioactive materials, reactor fuel assemblies, and waste.
- Impacts that could occur as a result of postulated accidents and intentional destructive acts (terrorist actions and sabotage).
- Potential disproportionately high and adverse effects on low-income and minority populations (environmental justice).
- Short-term and long-term land use impacts.
- Cumulative impacts.

### **NEPA Process**

The first scoping period for the SPD Supplemental EIS began on March 28, 2007, and ended on May 29, 2007, with scoping meetings in Aiken and Columbia, SC. DOE began a second public scoping period with publication of an Amended NOI on July 19, 2010,

and continuing through September 17, 2010. Public scoping meetings were held in Tanner, AL; Chattanooga, TN; North Augusta, SC; and Carlsbad and Santa Fe, NM.

Following the scoping period announced in this second Amended NOI, and after considering all scoping comments received, DOE will prepare a Draft SPD Supplemental EIS. DOE will announce the availability of the Draft SPD Supplemental EIS in the Federal Register and local media outlets. Comments received on the Draft SPD Supplemental EIS will be considered and addressed in the Final SPD Supplemental EIS. DOE currently plans to issue the Final SPD Supplemental EIS in late 2012. DOE will issue a record of decision no sooner than 30 days after publication by the Environmental Protection Agency of a Notice of Availability of the Final SPD Supplemental EIS.

#### **Other Agency Involvement**

The Tennessee Valley Authority is a cooperating agency with DOE for preparation and review of the sections of the SPD Supplemental EIS that address operation of TVA reactors using MOX fuel assemblies. DOE invites Federal and non-Federal agencies with expertise in the subject matter of the SPD Supplemental EIS to contact the NEPA Document Manager (see **ADDRESSES**) if they wish to be a cooperating agency in the preparation of the SPD Supplemental EIS.

Issued at Washington, DC, on January 6, 2012

---

Thomas P. D'Agostino  
Undersecretary for Nuclear Security

[FR Doc. 2012-445 Filed 01/11/2012 at 8:45 am; Publication Date: 01/12/2012]